

NASA-designed roadway crash barrier makes roads safer, minimizes human injury

Roadway crash barriers are designed improve road safety by preventing vehicles from leaving the roadway after impact. However, current road barriers have disadvantages – while they can prevent injury to nearby people and/or objects, they also can subject the occupants of the vehicles to abrupt deceleration levels high enough to cause injury or death.

Previously designed kinetic-energy-absorbing barriers reduce deceleration levels somewhat, but are not designed to soften impacts at optimum levels. In addition, some of the barriers cause debris to bounce back onto roadways or onto roadside areas, and, in cases of indirect incident vehicles, some of them can trap the vehicles in such a way that causes more injury than would occur if the vehicles were able to skid along the rigid barriers.

NASA's Johnson Space Center has developed a new Deceleration-Limiting Roadway Barrier that would provide three critical advantages over current technology by 1) allowing sideway-impacting vehicles to continue sliding along a racetrack without catching them, (2) catching directly impacting vehicles to prevent them from injuring nearby persons and objects, and (3) absorbing kinetic energy in a more nearly optimum way to limit decelerations to levels that human occupants could survive.

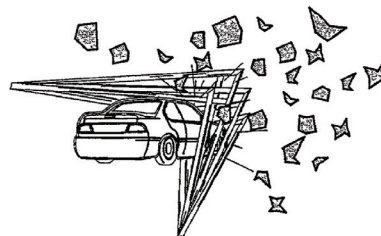
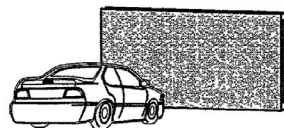
The concept of the technology includes a structure made in sections, with each section featuring a net (or mesh) "sandwiched" in between thin, energy-absorbing panels. The net is secured to anchors by energy-absorbing straps that deploy under a tension-causing load, which decelerates the moving vehicle. Ultimately, these straps provide a controlled resistance to the tensional load over a predefined placement or stroke to bring the moving vehicle to a stop.

An additional feature of the technology includes the roadside surface of the panel being coated with Teflon or another similar material, which would prevent sideway-impacting vehicles from breaking into the barrier. At the ends of the wall segment, a thin, aluminum tube would hold the net and panels upright until a vehicle crashed

into the wall. Preferably, a pair of adjacent parallel walls would be erected with the joints between their segments staggered to ensure that a vehicle crashing at any position would be stopped by at least one of the walls.

Potential commercial uses for the technology include the professional motor sports industry, public streets and roadways, the aerospace industry and secured facilities. This technology opportunity is part of the NASA Tech Transfer Program, the goal of which is to stimulate development of commercial applications of NASA-developed technology. NASA is seeking industrial partners to continue the testing effort and license the technology for commercialization.

Patent 6,997,637 has been issued for this technology. Anyone interested in partnering with NASA to license the technology for commercialization should contact the JSC Technology Transfer Office at jsc-techtran@mail.nasa.gov or 281.483.3809.



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